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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/989,337	11/20/2001	Kris Kelkar	147-25-023	1327

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EXAMINER

TRAN, KHAI

ART UNIT	PAPER NUMBER
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2637

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

OK

Office Action Summary	Application No. 09/989,337	Applicant(s) KELKAR ET AL.	
	Examiner KHAI TRAN	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2001.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-8, 25-27 and 29 is/are rejected.
 7) ☒ Claim(s) 9-24, 28 and 30-33 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/20/01</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4, 25, 26, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liberti, Joseph, et al ("Smart antennas for wireless communication", New Jersey, 1999, pages 95-101, cited by the Applicant).

Regarding claims 1, 3, 25, Liberti discloses method and receiver system for processing transmit signals as shown in Figure 3-10, comprising: a plurality of spatially separated antennas that convert the transmit signals to receiver signals (three antennas); a down-converter system for down-converting the receive signals

(RCVD/Down-converters); analog-to-digital (A/D) converters for digitizing the receive signals; and at least one data processor that is programmed to execute the step of spatially and temporally processing the receive signals to form a combined corrected signal (a combiner as shown in Fig. 3-10). Liberti fails to explicitly disclose the combined corrected signal is used to reduce errors in at least one signal parameter. However, Liberti discloses in page 95, an adaptive algorithm (see Fig. 3-10) for an optimal beam-forming technique by using a Least Means Square error algorithm and updating adaptive arrays to minimize the error between the output of the array and a desired response over a finite number of time samples (page 97). It would have been obvious to one having ordinary skill in the art at the time invention was made to reduce or minimize the errors in the signal parameter for recovering the original signals transmitted from the transmitter.

Regarding claims 2, 26, Liberti discloses the transmit signals having an average wavelength and the receiving step including the step of separating the antennas by spaces of substantially $\lambda_{avg}/2$ (a spatial separator for signals, page 98, line 20; and page 99, line 7, i.e., element spaces $\lambda_0/2$).

Regarding claims 4, and 27, Liberti discloses a demodulator for demodulating the combined signal (a demodulator shown in Fig. 3-10).

Claim Rejections - 35 USC § 103

4. Claims 5-8, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liberti, Joseph, et al ("Smart antennas for wireless communication", New Jersey, 1999, pages 95-101, cited by the Applicant) in view of Hoshikuki et al (U.S. Pat. 6,141,392).

Regarding claims 5-8, 29, Liberti fails to explicitly disclose the signal parameter being a signal preamble, or a signal code, or a spreading code, or a signal code.

Hoshikuki et al disclose the signal parameter is a signal preamble, or a signal code, or a spreading code, or a signal code (col. 4, line 55 to col. 5, line 3). It would have been obvious to one having ordinary skill in the art at the time invention was made to utilize the signal parameters taught by Hoshikuki et al in the teachings of Liberti in order to prevent interference between signals and improve a signal quality.

Allowable Subject Matter

5. Claims 9-24, 28, 30-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: Liberti and Hoshikuki et al fail to disclose wherein the processing step including the step of correcting the received signals to form respective corrected signals that reduce errors in the signal parameter and further including the steps of: comparing the signal parameter of at least one of the corrected signals to a known corresponding signal parameter to detect a difference; and altering phase and gain of the signal to reduce the difference below a predetermined threshold and thereby reduce the contribution of an interference signal to the combined corrected signal.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Kim (U.S. Pat. 6,151,487) discloses demodulation structure for fast fading cellular channels.

Xiao (U.S. Pat. 6,370,357) disclose mobile speed estimation for digital cellular radio system.

McGowan et al (U.S. Pat. 6,731,953) disclose implementing asymmetrical wireless communications.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHAI TRAN whose telephone number is (571) 272-3019. The examiner can normally be reached on 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JAY PATEL can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



KHAI TRAN
Primary Examiner
Art Unit 2637